

OBSERVATIONS ON THE BIOLOGY OF
HAPLORHYNCHITES
AENEUS (BOHEMAN)
(COLEOPTERA: RHYNCHITIDAE)

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ABSTRACT

The life history and habits of *Haplorhynchites aeneus* (Boheman) on *Helianthus divaricatus* L. in northern Illinois are discussed. Females cut stems below the flower heads, and eggs are deposited in the bases of the disk-flowers. Developing larvae feed on pollen and decaying tissue of the disk-flowers. Fourth instar larvae leave the flower head in October to enter the soil and overwinter; pupation occurs in the upper layers of the soil in July; and adults begin to emerge during the middle of July. Illustrations of all life stages and the host plant are included.

H. aeneus, previously in *Rhynchites* was originally described in 1829, and, although it is a relatively large and common weevil, little information (except host plants) has been published on its biology. It occurs throughout the eastern United States, westward to the continental divide, but is most numerous in the midwest.

Museum specimens associate it with many species in the sunflower tribe Heliantheae. The population involved in this study was associated with 3 species of *Helianthus*: *H. divaricatus* L. (woodland sunflower), *H. grosseserratus* Martens (sawtooth sunflower), and *H. annuus* L. (common sunflower), growing along railroad tracks in the same general area. *H. divaricatus* L. was the preferred host.

Cut heads of *Helianthus microcephalus* T. & G. were first noticed in southern Ohio in 1967. Adult weevils were collected on the cut heads but eggs and larvae were not found. The Illinois population was noticed in late September of 1970, and most of the observations and information were obtained in the summers of 1971 and 1972.

Male and female weevils were usually observed together on uncut flower heads shortly after their appearance in July (Fig. 1). Copulation occurs on these developing heads. After copulation, or even during copulation, the female weevils cut the stem with their mandibles $\frac{1}{4}$ to $\frac{1}{2}$ inch below the developing flower head (Fig. 2). The cut is not complete, and the flower head remains attached in a hanging position for variable lengths of time (Fig. 3). Clusters of as many as 10 weevils have been found beneath a single hanging flower head at night and on cool days.

Males and females were observed chewing and inserting their rostra into cut and intact flower heads during late July. Oviposition was not observed although eggs were consistently found within the base of the disk-flowers of cut heads only (Fig. 4). The eggs hatch in about 1 week.

The first instar larvae feed on pollen within 1 disk-flower (Fig. 5). As the larvae grow to second and third instars, adjacent disk-flowers are consumed (Fig. 6). Occasionally as many as 3 larvae were found within a single flower

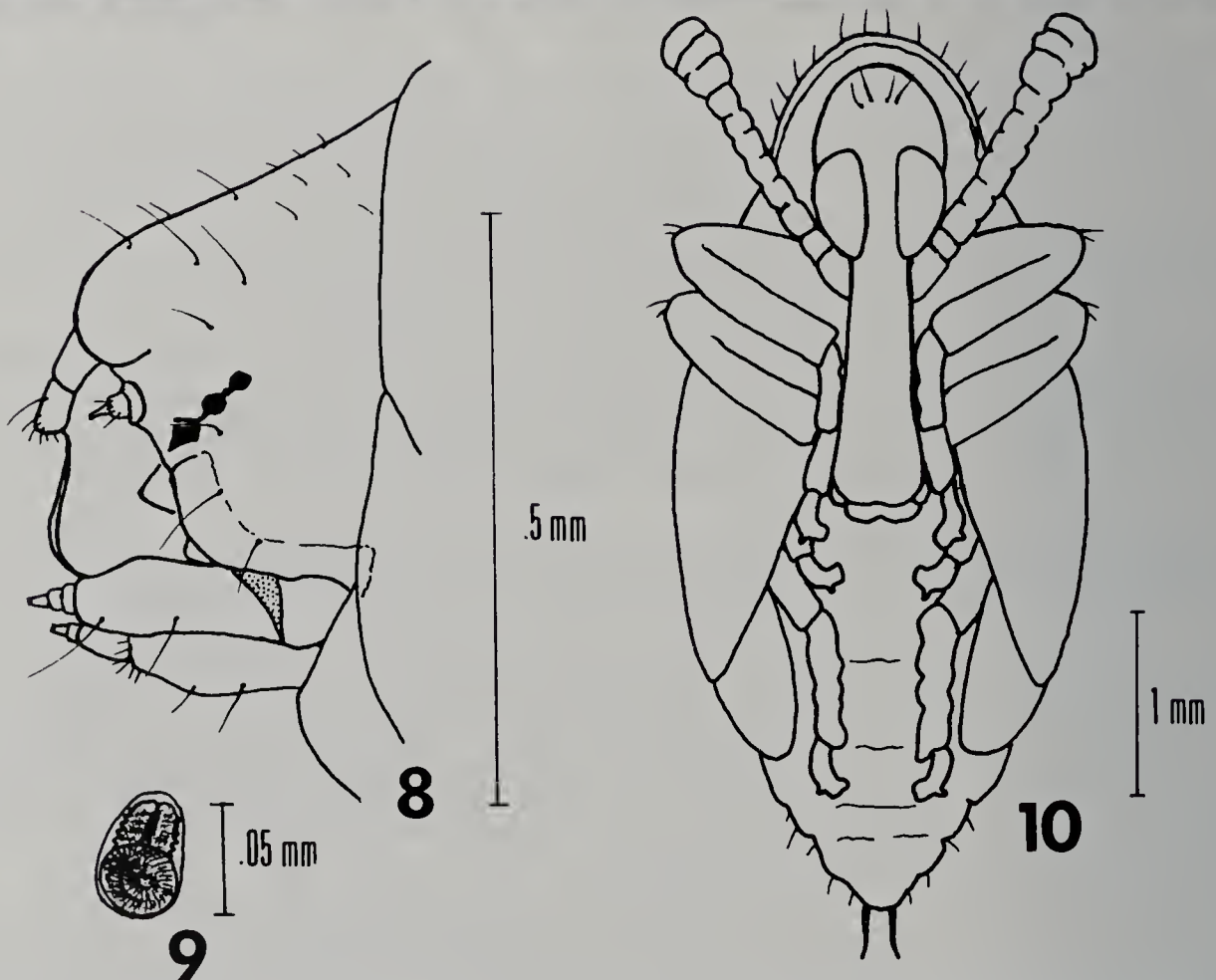
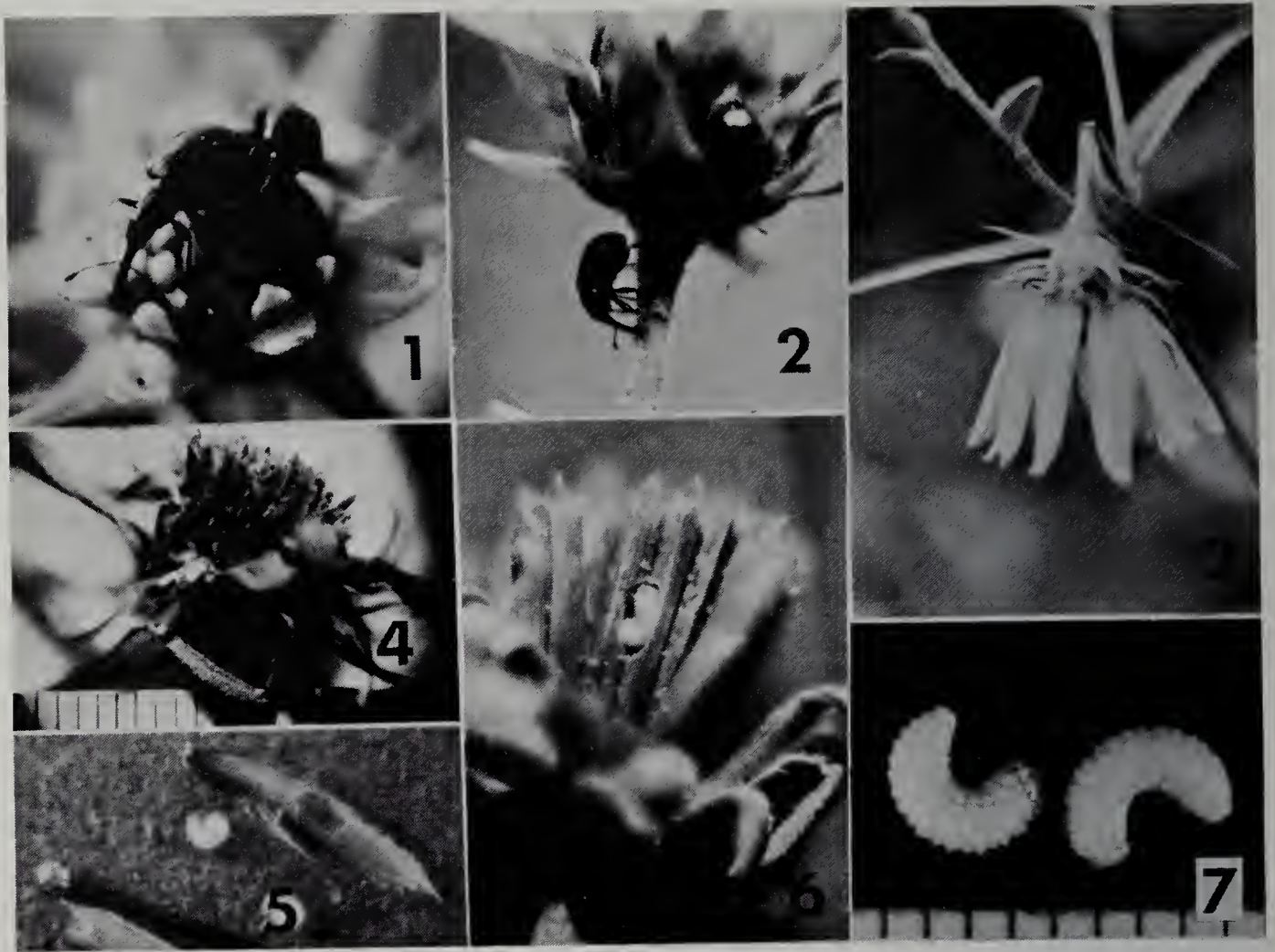


Fig. 1-2, 4-10: *Haplorhynchites aeneus*: 1) adult male and female, 2) female cutting stem of host plant, 4) egg, 5) 1st instar larva removed from disk-flower, 6) 2nd instar larvae in disk-flowers, 7) 4th instar larvae, 8) same, lateral view of head, 9) same, annular biforous prothoracic spiracle, 10) pupa, ventral view.
 Fig. 3: Cut flower head of *Helianthus divaricatus*.

head. The larvae when approximately 5mm long (Figs. 7-9) leave the cut heads (most are on the ground by this time) and enter the soil to a depth of about 1 foot. A few larvae were still in the fallen heads on October 15, but none could be found during the first week of November.

In the spring and early summer larvae were found in the soil around the host plants. Pupae (Fig. 10) were found in dirt cells in and around the roots in the first week of July. Pupal duration was about 10 days. Time between larval instars was 20 to 30 days.

LITERATURE CITED

- BOVING, A. G., AND F. C. CRAIGHEAD. 1930 (1931). An illustrated synopsis of the principle larval forms of the order Coleoptera. Ent. Amer. 11(1-4):1-351.
- HAMILTON, R. W. 1969. Studies of the rhynchophorous families Nemonychidae, Attelabidae, and Rhynchitidae, with a revision of North American species of *Attelabus* Linnaeus, *Rhynchites* Schneider, and *Eugnampus* Schoenherr (Coleoptera: Curculionoidea). Unpublished Ph.D. dissertation, The Ohio State University, 492p.
- HAMILTON, R. W. 1971. The Genus *Pselaphorhynchites* (Coleoptera: Rhynchitidae) in America North of Mexico. Ann. Ent. Soc. Amer. 64(5):983-996 (key to N.A. subfamilies and genera of Rhynchitidae).
- JONES, G. N. 1963. 3rd Ed. Flora of Illinois. Amer. Mid. Nat. Monogr. 7:1-401.

BOOK REVIEW

American Entomologists by Arnold Mallis. 1971. Rutgers University Press, 30 College Ave., New Brunswick, New Jersey 08903. 549 p.; 211 Fig. Cloth, \$15.00.

Although there are several articles containing biographies of American Entomologists, none is as extensive and as complete as this book. I'm sure that some would quarrel with the selections, but the 203 sketches cover most of the great deceased North American entomologists. The author must have spent thousands of hours of library research and voluminous correspondence in researching these exciting personalities. He has made a special attempt to discuss the men themselves, as well as their accomplishments.

The book is divided into 14 parts: 1) pioneer entomologists, 2) early state entomologists, 3) early federal entomologists, 4) early entomologists in Canada, 5) notable teachers, 6) notable Neuropterists, 7) notable Orthopterists, 8) notable Homopterists-Hemipterists, 9) notable Coleopterists, 10) notable Lepidopterists, 11) notable Hymenopterists, 12) notable Dipterists, 13) notable Arachnologists, 14) entomologists of divers interests.

In addition to Coleopterists treated in chapters on pioneer and early state entomologists (e.g., T. Say, T. W. Harris, etc.) the following are treated in Capt. 9: J. L. LeConte, G. H. Horn, E. A. Schwarz, H. Ulke, T. L. Casey, C. W. Leng, H. C. Fall, E. C. Van Dyke, W. S. Blatchley, F. E. Blaisdell, H. F. Wickham, and H. S. Barber.

The primary complaint I have is that the 549 pages are insufficient to cover the many other great names in such a diverse science. If this sounds like an endorsement for future volumes, it is! The author probably could put together another volume with the other sketches he must have accumulated during this book's preparation. I hope he will.—R. E. Woodruff